

Installation

This chapter gives installation hints and instructions

2 Unpacking & Inspection

Upon opening the shipping container, examine your **Prima LT** for mechanical defects. Report any problems promptly to MUSICAM USA or your sales representative. Plug the unit into the main power and turn on the unit by the rear panel power switch. No adjustments for line voltage or frequency are required. The front panel LCD should illuminate and display the power-up boot sequence. The power-up sequence will take about 30 seconds to complete.

2.1 Location of Units

The **Prima LT** has been designed to allow installation at locations with high RF fields and unstable power supplies. The **Prima LT** may be used with any AC source between 85 and 250 VAC, 47 to 63 Hz. The only consideration when rack mounting your **Prima LT** is that enough room on the sides and top should be provided for adequate ventilation.

2.1.1 Rack Mount Or Table Top

Install the provided rack-mount ears with the hardware provided if you will be using the **Prima LT** in an equipment rack. For table-top use, carefully apply the provided rubber feet to the bottom of the **Prima LT**.

2.2 Environmental Considerations

It is important that the ambient temperature specifications are met. It is usually possible to stack **Prima LT** units directly on top of other electronic equipment; however, this should be avoided if the lower

equipment produces a lot of heat. It is important that the **Prima LT** not be exposed to condensing humidity or fungal environments.

2.3 Configuration Dependencies

The **Prima LT** can be used with a variety of digital transmission facilities. Typical applications consist of ISDN, satellite and dedicated facilities. The cable lengths for the interconnections can be from centimeters to kilometers, and are determined by the specifications of the interface you are using. It is important to use twisted pair cable with an overall shield for the compressed audio. Flat ribbon cable should be avoided.

The audio interconnections are much less tolerant to longer cable lengths. Good cable construction is a necessity for audio cables. Remember, whatever impairments are introduced before the signal reaches the encoder will appear at the output of the decoder.

2.4 Connections to the Network

The **Prima LT** may be equipped with a variety of digital interface modules for ISDN, leased circuits, and other transmission media (including V.35 and X.21/RS422 protocols). In addition, since the RS422 interface is electrically compatible with industry standard RS449 equipment, the **Prima LT** X.21/RS422 adapter can be used with RS449 equipment with the addition of an adapter cable. Each of these digital interfaces requires clock and data to be exchanged between the **Prima LT** and the terminal equipment. **The *Prima LT* always expects the clock to be provided by the terminal equipment; therefore, only terminal equipment that provides clock data can be used.** The encoder section outputs data synchronized with the clock and the decoder expects the data to be synchronized with the clock. Figures 2-1 and 2-2 show the interconnection of the **Prima LT** with a generic piece of terminal equipment. The timing relationships are shown in the **CDQPrima** Technical Reference Manual, available from MUSICAM USA or on-line at www.musicamusa.com.



!note:

When using X.21, RS422 or V.35 interfaces, the **Prima LT** is configured as a DTE device

The data and clock lines are differential, and require a pair of wires for each signal. The control lines in the V.35 interface are single-ended and require only one wire for each signal. The X.21 control lines are differential. The RS422 interface does not support any control lines.

Any RS422 input control lines defined are ignored by the **Prima LT** and any output control lines defined are held at constant values. Refer to Appendix B for the definition of the pins used for each type of interface.

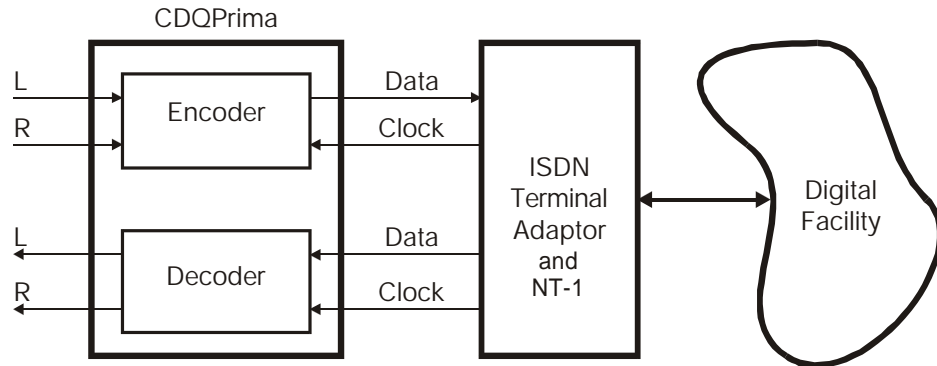


Figure 2-1 Basic Interconnection to Digital Network - RS422/V.35

2.4.1 V.35 Using the DIF102 Digital Interface Module

Each interface defines a voltage level for each of the signals. In the case of V.35 and X.21, a connector type is also defined. The large, rectangular connector defined in the V.35 specification is not used by the **Prima LT** because of its size. Instead, a smaller DB15 connector is used. In the case of the V.35 interface, the **Prima LT** conforms to the electrical specification but requires an adapter cable to convert the DB15 connector to the connector specified in the V.35 specification. The connector and the pin-out chosen for the V.35 interface in the **Prima LT** are a common deviant found in many systems. An adapter cable is available, or can be made following the diagram found in Appendix A. It is important to remember that V.35 has a separate clock for transmitted and received data.

2.4.2 X.21, RS422/RS449 Using the DIF101 Digital Interface Module

The RS422 interface specification defines only the electrical voltages at the interface and leaves the pin-out and meaning of the pins to the hardware designer. The RS449 interface specification utilizes the electrical specifications of RS422 but specifies a mechanical connector. RS449 equipment is therefore electrically compatible with the **Prima LT** RS422 interface when an adapter cable is used. RS449 also specifies numerous control signals besides clock and data, which are not used by the **Prima LT**. The **Prima LT** RS422 interface pin-out is specified in Appendix B.

The RS422 interface also has a separate clock for the transmitted and received data. The RS422 interface can also echo the transmitter clock. If the terminal equipment clocks the encoder data with the echoed clock, then the **Prima LT** may be located up to 4000 feet (1219 meters) from the terminal equipment without concern for the encoder-to-clock skew.

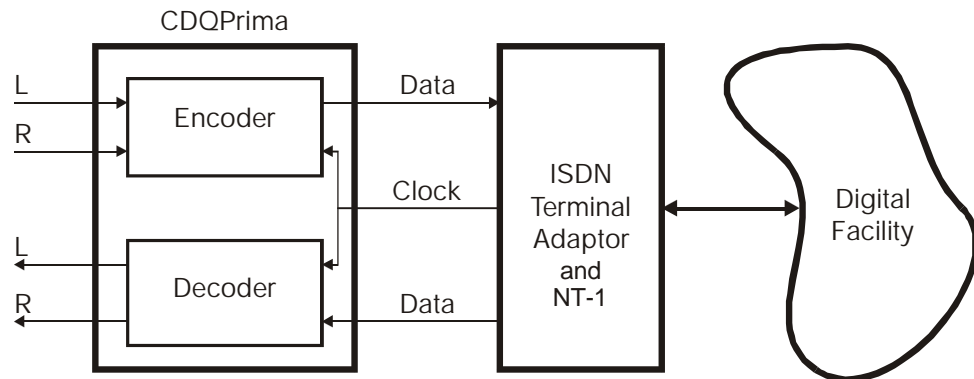


Figure 2-2 Basic Interconnection to Digital Network - X.21 interface

The X.21 interface specification is, in general, a very complex specification. The general specification allows a mechanism for communication between the customer equipment and the network. This communication path can be used for things such as dialing. A subset of the specification, called the leased circuit, restricts the interconnection to only clock and data and a very simple control signal. The mechanical connector required is the DB15 with the pin-out specified in the **CDQPrima** Technical Reference Manual. The electrical specification for X.21 is identical to those of RS422. The X.21 interface has only one clock for both the transmit and receive signals.

Since the X.21 uses the RS422 electrical interface, the **Prima LT** can use the same connector and module for both interfaces. In the case of the X.21 interface, the single clock is used internally for both the transmit and receive timing. The selection of the type of digital interface is governed by software setup. See Chapter 5 for the appropriate settings. **To change the hardware configuration of the DIF101 interface card between X.21 and RS422, change the position of jumper J4 on the interface module.** The jumper on positions 1 and 2 is used for X.21, and when on positions 2 and 3, the card is set for RS422 operation.



!note:

2.4.3 ISDN Using the TA101 Terminal Adapter

Although your *Prima LT* does support the TA101 terminal adapter, the TA101 is obsolete and is no longer supported by MUSICAM USA. If you would like to use a TA101 with the **Prima LT**, please refer to the **CDQPrima** Users Guide, available on-line at www.musicamusa.com, for setup instructions.

2.4.4 ISDN Using the TA201 or TA301 Terminal Adapter

The TA201 ISDN interface provides connections for one BRI S/T interface and requires an external NT-1 for North American operation. The TA301 is essentially the same as the TA201 but has a built-in NT-1 and therefore can only be used in North America and countries that require the user to provide an NT-1.

The TA201 has every country specific protocol software built in, and does not require any ROM chip changes to be used anywhere in the world. Each TA201 or TA301 ISDN interface adapter supports 2 ISDN 56 or 64 kb/s “B” channels that can be used independently or bonded together into a 112 or 128 kb/s channel. One single RJ-45 connector is used for the ISDN S/T connection to an external Network Termination (NT-1) on the TA201. The TA301 has one RJ-45 connector used for the ISDN ‘U’ connection directly to the North American ISDN network. See Chapter 5 for details on TA configuration.

2.5 Rear Panel Connectors

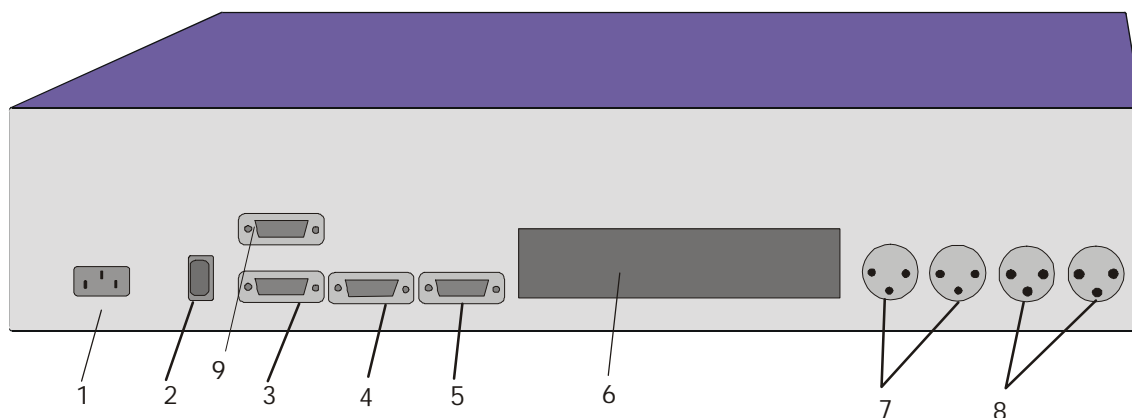
Refer to Figure 2-3 for the locations and types of the connectors discussed below. The pin designations for all rear panel connectors can be found in Appendix B.

2.5.1 Power & Power Switch (1, 2)

The power switch is used to control the main power to the **Prima LT**. The **Prima LT** is equipped with a world power supply, and operation is possible at all standard world voltages and mains frequencies. No internal or external adjustments or jumpers are required.

2.5.2 Alarm Port (3)

This is a DPDT relay output whose function is controlled by the RLS (Summary Alarm Relay) action. See the **CDQPrima** Technical Reference Manual for information on the use of this feature. These relay contacts are often used as a summary alarm output to indicate the failure of any major subsystem or loss of the transmission facility, but can be re-programmed using Prima Logic Language.



INDEX #	DESCRIPTION	CONNECTOR
1	Power connector	
2	Power switch	
3	Alarms	DB9-M
4	Remote control port	DB9-F
5	Ancillary data port	DB9-M
6	Digital interface module port	
7	Analog audio output	XLR-M
8	Analog audio input	XLR-F
9	AES/EBU or S/PDIF I/O	DB9-F

Figure 2-3 **Prima LT** Rear Panel Connections

2.5.3 Remote Control Port (4)

This I/O port on the **Prima LT** provides for RS232 or RS485 remote control. For a detailed description of all remote control commands, see the **CDQPrima** Technical Reference Manual and the **CDQPrima** Remote Control Manual. Please note that since both RS232 and RS485 interfaces share the same connector, special cables are required. A description of the required cables and the connector pin-outs can be found in Appendix A and B.

2.5.4 Ancillary Data Port (5)

The Ancillary Data connector provides an RS232 bi-directional interface for the transmission of asynchronous data. Data rates range from 300 to 38,400 bps. The data is transmitted in the same bit stream as the compressed audio. The cable configuration can be found in Appendix A, refer to the **CDQPrima** Technical Reference Manual for the required setup and configuration of this port.

2.5.5 Digital Interface Module Port (6)

The **Prima LT** can accommodate a single Digital Interface Module (DIM). Currently, four different Digital Interface Modules are available: TA201 and TA301 for ISDN, DIF101 for RS422/X.21 and DIF102 for V.35. The interface supports the older TA101 terminal adapter, but this module is no longer available from MUSICAM USA.

2.5.6 Analog Audio I/O (7, 8)

The **Prima LT** provides 24 bit A/D and D/A converters for superior audio quality. The analog sections of the **Prima LT** are factory set to +18 dBu maximum input levels, but can be adjusted to +12 or +15 dBu maximum. Please contact MUSICAM USA if you require additional information or non-standard I/O levels or impedance. The **Prima LT** uses industry standard XLR audio connectors for analog audio. Input impedance can be set to 600 ohms or >25 kOhms balanced. Output impedance is 600 ohms or <60 ohms balanced.

2.5.7 Digital Audio I/O (9)

This DB9-F connector is used for both input and output, as well as external sync when the **Prima LT** is equipped with the optional digital audio I/O. Refer to Appendix A for the DB9 to XLR adapter cable required.